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Evolution of antigen-specific immune responses in cutaneous leishmaniasis patients

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Abstract

Aims: Despite immunization appearing to be the most appropriate strategy for long-term control of the vector-borne leishmaniases, no sustainable vaccine is currently available against any form of leishmaniasis. We therefore evaluated, in the context of vaccine antigen candidates, antigen-specific immune response at various stages of cutaneous leishmaniasis (CL). Methods and results: Peripheral blood mononuclear cells (PBMC) isolated from healthy volunteers and CL patients (caused by either Leishmania major or L tropica) were incubated with crude Leishmania proteins (soluble Leishmania antigen; SLA), single recombinant proteins (TSA, LeIF, LmSTI1) or chimeric fusion proteins (LEISH-F2 and LEISH-F3). The concentrations of immune modulatory cytokines were then determined. While we did not detect appreciable antigen-specific IL-5 secretion, SLA induced secretion of interleukin (IL)-10 in cultures from early active lesion CL patients and even from healthy individuals. Conversely, interferon (IFN)-γ responses to SLA and recombinant proteins followed a similar pattern, developing only in the late active CL lesion phase. Once established, antigen-specific IFN-γ responses persisted in cured CL patients. Conclusion: Together, our results provide further insight into the development of immune responses during CL and further validate the selection of LEISH-F2 and LEISH-F3 as vaccine antigen candidates.